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Implementing The Tracking Network

poster ABSTRACT

Poster No. 5

TITLE

CHRONIC EXPOSURE TO AMBIENT OZONE AND ASTHMA HOSPITAL ADMISSION AMONG CHILDREN

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Network Content

OBJECTIVES

The results from this project can be used to validate the assumption of the case-crossover design, a method currently used in air pollution studies. The dataset we used serves as a good model for the longitudinal follow-up of health endpoints. More importantly, the long-term health effects of air pollution, which are rarely evaluated, were investigated.

SUMMARY

Although some studies have found positive associations between air pollution and acute health effects, the effect of long-term exposure to air pollution on asthma has rarely been examined. This project investigated if chronic exposure to high ozone levels had an impact on childhood asthma admissions in New York State (NYS). We followed a birth cohort born in NYS during 1995-1999 to the first admission for asthma or until December 31, 2000. A total of 1,204,396 children were identified through the Integrated Child Health Information System (ICHIS), which combines data from birth certificates and hospital discharges. The ICHIS data were linked with ambient ozone (O3) data (8 hour maximum). Long-term O3 exposure was defined using three measures: mean daily concentration during the follow-up period, mean daily concentration during the ozone season (April-October), and the proportion of follow-up days above the 75th percentile of the ambient O3 levels (i.e., exceedance proportion). Logistic regression analysis was performed to measure the impact, after adjusting for geographic region, gender, age, birth weight, gestation, maternal race/ethnicity, education, and smoking status during pregnancy. Our analysis found that asthma admissions were significantly associated with an inter-quartile increase in O3 level and with an increase in the exceedance proportion. The strongest association was found when exposure was limited to the ozone season. These associations was stronger among low socio-demographic groups (Hispanics, low educational level, and New York City residents). O3 levels during the first two years of life showed a significant, but not stronger, association with asthma hospitalizations.

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